

Claims:

1. A restoration method for restoring a flow of packets in a packet transfer network composed of a plurality of routers, comprising the steps of:

5 a) setting a working route and a reserved route in the packet transfer network, wherein the reserved route branches from the working route at a start-point router;

at each of routers other than the start-point router on the working route,

10 b) determining whether a failure occurs in a link to a next-hop router on the working route;

c) determining whether an incoming packet is to be protected;

15 d) when a packet to be protected is received in case of occurrence of the failure, sending the packet to be protected back to the start-point router; and

at the start-point router,

e) when receiving back the packet to be protected, forwarding it to the reserved route.

2. The restoration method according to claim 1, wherein,
20 when the start-point router receives a packet to be protected in case of occurrence of the failure, the start-point router forwards

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3. The restoration method according to claim 1, wherein the working and reserved routers are set by a network management server controlling each of the routers in the packet transfer network.

d.1) when a packet to be protected is received in case of occurrence of the failure, adding a protection control header to the packet to be protected to produce a return packet; and

the step (e) comprises the steps of:

e.2) removing the protection control header from the return packet to produce an original packet to be protected; and

e.3) forwarding the original packet to the reserved route.

20 5. A packet transfer network comprising:
 a plurality of routers; and
 a network management server for designing a packet

5 wherein each of a plurality of designated routers
forming the working route, comprises:

a table for storing information indicating where a
10 packet to be protected is forwarded to; and

15 wherein the designated routers other than the start-point router forwards the packet to be protected back to the start-point router in case of occurrence of the failure, wherein the start-point router forwards the packet to be protected received back from another router to the reserved route.

7. The packet transfer network according to claim 5,

5 8. A router in a packet protection network in which a
working route and a reserved route are set by controlling designated
routers which are involved in the working and reserved routes,
wherein the reserved route branches from the working route at a
start-point router, comprising:

15 to be protected is received in case of occurrence of the failure,
forwarding the packet to be protected depending on the information
stored in the table.

20 start-point router in case of occurrence of the failure, wherein
the start-point router forwards the packet to be protected received
back from another router to the reserved route.

9. The router according to claim 8, wherein the

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working route,

at each of routers other than the start-point router on the working route,

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d) when a packet to be protected is received in case of occurrence of the failure, sending the packet to be protected

back to the start-point router; and

at the start-point router,

e) when receiving back the packet to be protected,
forwarding it to the reserved route.

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